UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2003/00067

April 16, 2003

Mr. Fred Patron
Federal Highway Administration
The Equitable Center, Suite 100
530 Center Street NE
Salem, OR 97301

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation on the Effects of the Miller Creek Culvert Removal Project, Multnomah County, Oregon

Dear Mr. Patron:

Enclosed is a biological opinion (Opinion) pursuant to section 7 of the Endangered Species Act (ESA) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries), on the effects of the proposed Miller Creek Culvert Removal Project, Multnomah County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Lower Columbia River steelhead (*Oncorhynchus mykiss*), Lower Columbia River chinook salmon (*O. tshawytscha*), and Columbia River chum salmon (*O. keta*). As required by section 7 of the ESA, NOAA Fisheries included reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the impact of incidental take associated with this action.

Included with the BA was a written request for concurrence that the proposed action is "not likely to adversely affect" (NLAA) for the for ESA-listed Snake River sockeye salmon (*O. nerka*), Snake River fall chinook salmon, Snake River spring/summer chinook salmon, Upper Columbia River spring-run chinook salmon, Upper Willamette River chinook salmon, Snake River steelhead, Upper Columbia River steelhead, Middle Columbia River steelhead, and Upper Willamette River steelhead. NOAA Fisheries concurs with FHWA's determination that the proposed action is NLAA for these ESA-listed species. These species will not be further addressed in this Opinion.

This document also serves as consultation on essential fish habitat (EFH) for chinook and coho salmon pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600. After review of the EFH information included with the BA, NOAA Fisheries has determined the proposed action is likely to adversely effect EFH for chinook and coho salmon.

If you have any questions regarding this consultation, please contact Art Martin of my staff in the Oregon Habitat Branch at 503.231.6848.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Molly Cary, ODOT
Diana Hwang, USFWS
Tom Murtagh, ODFW

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Miller Creek Culvert Removal Project,
Multnomah County, Oregon

Agency:	Federal Highway Administration
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	April 16, 2003
Issued by:	for Michael R Crouse _____ D. Robert Lohn Regional Administrator
Refer to:	**2003/00067**

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1. INTRODUCTION

1.1 Background

On February 12, 2003, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a request, including a biological assessment (BA), from the Federal Highway Administration (FHWA) for Endangered Species Act (ESA) section 7 formal consultation and Magnuson-Stevens Fishery Conservation and Management Act (MSA) essential fish habitat (EFH) consultation for the Miller Creek Culvert Removal Project, Multnomah County, Oregon. The Oregon Department of Transportation (ODOT) is the designated non-Federal representative of the FHWA and is responsible for the project design and construction management.

In the February 12, 2003, letter and BA, the FHWA determined that the following three listed evolutionarily significant units (ESUs) of Columbia basin salmonids may occur within the project area: Lower Columbia River (LCR) steelhead (*Oncorhynchus mykiss*), LCR chinook salmon (*O. tshawytscha*), and Columbia River (CR) chum salmon (*O. keta*). Subsequently, the FHWA determined that the proposed action is "likely to adversely affect" (LAA) LCR steelhead, LCR chinook salmon, and CR chum salmon. LCR steelhead were listed as threatened on March 19, 1998 (63 FR 13347), LCR chinook salmon as threatened on March 24, 1999 (64 FR 14308), and CR chum salmon as threatened on March 25, 1999 (64 FR 14508). The FHWA determined that the proposed action would not adversely effect EFH for chinook or coho salmon.

The objective of this consultation is to determine whether the proposed action is likely to jeopardize the continued existence of the three listed ESUs of Columbia basin salmonids described above.

This document is based on the information presented in the BA, site visits, and discussions with ODOT, the Oregon Department of Fish and Wildlife (ODFW), and project consultants.

1.2 Proposed Action

The proposed action includes: (1) Culvert removal and channel reconstruction; and (2) retrofit of the remaining culverts. The project BA includes a set of conservation measures or best management practices (BMPs) designed to minimize adverse effects to steelhead, chinook salmon, and chum salmon and their habitats. These BMPs are described on pages 36-40 of the BA. Specific BMPs for in-water work, culvert removal and retrofit, bank work, revegetation, erosion control, hazardous materials, and site-specific conservation measures are included. NOAA Fisheries regard these BMPs as integral components of the project and considers them to be part of the proposed action.

Direct effects to listed species may occur at the project sites and may extend upstream or downstream based on: (1) The potential for impairing fish passage; (2) any change to stream hydraulics; (3) sediment and pollutant discharge; (4) the risk of chemical contamination of the aquatic environment; and (5) the extent of riparian habitat modifications. Indirect effects to

listed species may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activities includes the immediate watershed where the proposed action will occur, and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For the purposes of this Opinion, the action area is defined as the streambed and streambank of Miller Creek, extending upstream to the project disturbance limits, and downstream approximately 100 meters (m) below the project disturbance limits to its confluence with the Multnomah Channel.

All in-water work activities will occur during the Oregon Department of Fish and Wildlife's (ODFW) preferred in-water work timing guideline[1] of July 1 through October 31. Any extensions or alterations to this in-water work timing will require concurrence from NOAA Fisheries.

1.2.1 Culvert Removal and Channel Reconstruction

The proposed action includes removal of the existing 45 meter (m) long, 1.8 m by 1.8 m reinforced concrete box culvert (RCBC) under Highway 30 and reconstruction of the Miller Creek channel. The current RCBC is at a 5% slope and is a barrier to upstream fish passage at all flows and for all life stages of listed salmonids. Work will be sequenced to facilitate construction, isolate the work area from flowing water, remove any fish present within the isolated work area, and rewater the newly constructed Miller Creek channel.

Fill Removal

The fill above and along the RCBC, above the ordinary high water mark (OHWM), will be removed with excavators or other similar equipment. The steep and narrow side slope conditions may require the temporary excavation of flat platforms into the side slopes as a work platform for the excavators. Because of the constrained site conditions and the risk of destabilization of the side slopes through transport of equipment and fill (up and down the side slopes), a series of excavators would likely form a "daisy chain" up the slope to move fill through bucket to bucket transfers. Thus, it will be necessary to refuel and leave equipment within 45 m of the OHWM overnight.

Specific conservation measures will be employed to prevent contamination of the riparian area and aquatic environment. Containment systems functioning as impervious basins potentially include metal or plastic tubs and earthen berms lined with plastic sheets or other impervious materials for stationary generators and similar equipment. Fueling of stationary vehicles such as excavators would not be allowed during the second half of the work shift to minimize the amount of fuel remaining in the vehicles during non-working times, and such fueling would

[1] Oregon Department of Fish and Wildlife, *Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources*, 12 pp (June 2000)(identifying work periods with the least impact on fish) (http://www.dfw.state.or.us/ODFWhtml/InfoCntrHbt/0600_inwtrguide.pdf).

occur with the use of oil-absorbent pads around fuel nozzles to avoid and minimize the risk of contamination of the aquatic environment.

Stream flow will remain within the RCBC, and a barrier such as a sandbag wall would prevent any fill material or other construction debris from entering Miller Creek during this stage of fill removal. Removal of the existing fill will also require the removal of approximately five deciduous trees, each less than 25 centimeter (cm) diameter breast height (dbh). Ten trees will be replanted to replace the lost function from the five trees removed as a result of the culvert removal. In addition, 16 trees will be planted to meet the site restoration requirements for the Miller Creek Half-Viaduct Project (completed in 2002) for a total planting of 26 trees.

Work Area Isolation

After the fill material has been removed and the RCBC exposed, a temporary water management plan (TWMP) will be implemented to route Miller Creek around the RCBC and to isolate the work area from flowing water. The TWMP plan will be implemented during the low flow period for Miller Creek, which occurs during the ODFW defined in-water work period of July 1 through October 31. Streamflow is estimated to be slightly more than a trickle during this period. Prior to complete dewatering of the isolated work area, a qualified ODFW or ODOT biologist would remove and relocate any fish from the isolated work area in accordance with NOAA Fisheries' procedures as outlined in the 2002 SLOPES biological opinion (NMFS 2002).

Streamflow will be collected through a series of coffer dams, likely constructed of sand bags and plastic sheeting or similar materials, and installed upstream of RCBC. Stream flow would be conveyed around the work area using a gravity-fed system or an active pump system or a combination of both systems. Regardless of the bypass system employed, pumping would be necessary for short periods during the installation and removal of the TWMP to ensure flowing water is maintained at all times in the Miller Creek channel downstream of the isolated work area. If pumps are employed, the TWMP will be monitored on a 24-hour basis and a fully-operational backup pump will be available, on-site, to ensure that flowing water will be maintained in the Miller Creek channel downstream of the isolated work area.

Culvert Removal

After the work area is isolated from the flowing waters of Miller Creek, the RCBC and its outlet headwall and apron will be demolished and removed from the project site. Concrete and steel rebar debris would likely be removed from the work area utilizing the same method used to remove the fill material as described above.

Miller Creek Channel Reconstruction

The Miller Creek channel will be reconstructed using the original, natural streambed materials, if they still exist under the RCBC, or a gradation of field-blended rock materials or a combination of both to simulate a natural stream bottom. This simulated stream bottom will use large boulders and woody materials that function both hydraulically and biologically to facilitate both upstream and downstream fish passage, and will function similarly to the natural streambed upstream of the project site.

The bottom of the reconstructed channel will be limited to approximately 4.5 m in width by the existing side slopes under the existing Highway 30 bridge. This width is approximately equal to the average bankful width of the channel upstream of the project site. The reconstructed channel will have a slope of approximately 6%. This channel slope is slightly steeper than long stream profile of 4.5%. The steeper slope is necessary to match the channel elevation at the inlet of the next culvert downstream and the needed channel elevation at the upstream end of the removed RCBC to ensure no upstream system degradation would occur as a result of potential headcutting upstream. A small head cut would likely occur, moving only the artificially accumulated bedload that now persists as an artifact of the RCBC constraining the Miller Creek channel width. This bedload material would likely move downstream through the new channel, reforming natural habitat features that would have occurred naturally if the RCBC had never existed.

Once the RCBC is removed, the ODOT engineer of record will be able to see if the natural streambed materials still exist and will then determine the appropriate mixture of existing and additional streambed material that will be used to reconstruct the new Miller Creek channel. A gradient of rock ranging from metric class 500 to1000 down to fines will be used to reconstruct the new channel. The materials will be carefully mixed during construction to ensure structural stability through rock to rock contact and ensure the voids are fully filled with cobbles, gravels and fines to ensure natural hydraulic performance for fish passage. A combination of high pressure water and construction equipment will be used to ensure compaction of the bed material, and drive fines into any remaining voids within the newly-constructed channel. The reconstructed bank line will extend up the slope to the 100-year flood elevation. This will also function to minimize the likelihood of turbidity during subsequent freshets. Sediment retention devices such as a "sedimat" would be installed downstream of the new channel prior to rewatering of the isolated work area to retain suspended fines and limit downstream turbidity.

Salmonid habitat features would be integrated into the reconstructed channel. At least three clusters of metric class 500 to 1000 boulders, and at least four Douglas-fir or Western Red Cedar trunks with root wads attached will be incorporated at various intervals along the reconstructed channel. These habitat features would provide channel complexity, additional hydraulic refuge or resting areas, and overhead cover for salmonids utilizing the channel for migration or rearing. Approximately 100 willow cuttings will be incorporated into the reconstructed channel margins to provide shade and additional habitat function for salmonids.

Rewatering of the Isolated Work Area

Upon completion of the RCBC removal, channel reconstruction and the downstream culvert retrofits, as described in section 1.2.2, the TWMP will include the careful removal of the upstream coffer dams and reintroduction of the streamflow into the new channel in a manner that maintains stream flow in the Miller Creek channel downstream of the project site and limits turbidity.

1.2.2 Retrofit of the Remaining Culverts

The proposed action includes the retrofit of two existing twin RCBCs, a railroad culvert, and a frontage road culvert downstream of Highway 30 RCBC removal and channel reconstruction. Currently, these twin RCBCs are barriers to upstream fish passage for most life stages of salmonids during most flows. Streambed substrate, primarily silts, are deposited in the eastern barrel of both RCBCs and only flow water during large runoff events. A cobble/gravel substrate wedge extends over the outlet apron and part way up the western barrel of the frontage road RCBC. These substrate deposits would be removed after the work area is isolated from flowing water to allow for instillition of the culvert retrofit. Natural streambed substrate would remain at it's current elevation downstream of the apron, effectively backwatering the frontage road RCBC outlet. This would allow for a swim-in condition during upstream migration for adult and juvenile salmonids.

Retrofit Design

The upstream twin RCBC is 12 m long, 1.8 m wide, 0.9 m high and at 3.9% slope. This twin RCBC is located directly downstream of the Highway 30 RCBC and serves as a railroad crossing over Miller Creek. The downstream twin RCBC is 20 m long, 2.6 m wide, 0.9 m high and 1.9 % slope. This twin RCBC is located directly downstream of the Railroad RCBC and serves as a frontage road crossing over Miller Creek. The proposed design includes the installation of 15 cm high steel weirs with a 25 millimeter (mm) by 30 cm low flow notch periodically along the northern barrels of both the Railroad RCBC and the frontage road RCBC to concentrate water depth during low flow and slow water velocities during all flows.

A small, permanent 20 cm high diversion plate will be installed at the inlet of the southern barrel of the railroad RCBC to divert all of the stream flow during low flow periods into the northern barrel, but convey flows during higher flow periods. A small, 60 cm high concrete cutoff wall would be added between the twin RCBC interior walls to maintain all of the low flow water into the northern barrel of the frontage road RCBC during low flow periods.

1.2.3 Project Monitoring

The proposed action includes an effectiveness monitoring plan designed to evaluate whether the hydraulic and biologic aspects of the proposed action have the desired effects. The results of project monitoring would also serve as feedback to identify if modifications to the fish passage design or planting plan are needed.

Fish Passage

The FHWA proposes to monitor the new Miller Creek channel and the two retrofitted culverts for a period of five years after completion of the project. Monitoring would occur at least twice a year, once during typical winter flow and once during typical summer flow. During the first two years after competition of construction, the ODOT engineer of record or fish passage designer and the ODOT biologist will monitor the project to evaluate if the desired hydraulic characteristics are being achieved to facilitate fish passage. During the remaining three years of

monitoring, the ODOT biologist will monitor the project and discuss the monitoring observations with the ODOT engineer of record or fish passage designer to evaluate if the desired hydraulic characteristics are being achieved to facilitate fish passage.

Fish passage monitoring will include a record of ocular estimates of hydraulic conditions, including: (1) Jump heights, (2) velocities, (3) channel characteristics, (4) pool crest elevations, (5) flow patterns (*e.g.* low flow sinuosity, scour areas), and (6) other parameters identified by the ODOT engineer of record after construction. ODOT would then make needed changes to the project site if the results of the monitoring indicate the need to: (1) Restore structural stability; (2) make modifications such as adding fines to seal the channel; (3) increase hydraulic roughness to achieve pockets of slow water; or (4) add structural components to reduce water velocity or increase water depth.

Plant Survival

The FHWA proposes to monitor the Miller Creek plantings annually for five years during late spring or summer. The goal of the plantings is to establish 80% aerial cover by the end of the five-year monitoring period. An ODOT biologist or other qualified individual would develop an annual biological monitoring report including the progress of the plantings and other biologically significant parameters. ODOT will monitor and replace failed tubelings/seedlings, as necessary, within the planting area near Newberry Road.

The FHWA expects areas along the new Miller Creek channel to be less than favorable to willow cuttings. Difficult growing conditions may include poor quality rooting medium, unavoidable voids in the new channel's rock-to-rock interface, and reduced sunlight and moisture under the existing Highway 30 bridge structure. Therefore, only those willow cuttings that have successfully survived after the first year will be evaluated against the goal of 80% aerial cover in subsequent biological monitoring reports. The FHWA expects that after a few seasons of natural bedload transport and deposition along the new Miller Creek channel, additional pockets of substrate will begin to recruit suitable riparian species from adjacent seed sources and ODOT-supplemented seed sources.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

Essential features of salmonid habitat required for the survival and recovery of listed species are water quality, water quantity, water temperature, water velocity, substrate, cover/shelter, food, space, and safe passage conditions (NMFS 1996). Together, these factors determine the biotic composition, structure, function, and stability of aquatic and riparian ecosystems and their ability to support the biological requirements of the species (Spence *et al.* 1996).

Pacific anadromous salmonid populations in the Pacific Northwest have evolved under the unimpaired flow regimes historically provided by their natal streams. The flow regimes reflect the dynamic character of flowing water systems, which is determined by the quantity, timing and natural variability of stream flow (Reiser 1989). These characteristics drive many of the physical processes in watersheds that are important to salmonid survival and conservation. Unimpaired flow regimes benefit salmonids in two critical ways: (1) They provide temporally and spatially appropriate water quantities to support specific life stages; and (2) they ensure self-sustaining ecosystem processes by which salmonid habitat is created and maintained over time.

Dynamic hydraulic, geomorphic, and ecologic processes must be maintained to provide salmonids a high probability of access to sufficient quantities of quality habitats for timely and successful completion of each and every life stage in freshwater (Bisson *et al.* 1997). However, given inter-annual hydrologic variability, even under an unimpaired flow regime, the quantity and quality of freshwater habitat necessary to obtain food and grow, escape predation, resist disease, migrate, and survive extreme environmental events is highly variable and can readily become limiting (Bjornn and Reiser 1991). Stream-rearing salmonids must survive extended periods in freshwater through winter and summer rearing bottlenecks (Bjornn and Reiser 1991). In addition, environmental conditions during extensive downstream and upstream migrations during juvenile and smolt life stages and again during adult and pre-spawning life stages can also significantly limit survival (NMFS 2001).

2.1.2 Evaluating Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. This analysis involves the initial steps of defining the biological requirements and current status of the listed species, and evaluating the relevance of the environmental baseline to the species' current status. Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmonid's life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action. For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action.

2.1.3 Biological Requirements

The first step in the method NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed salmon is to define the biological requirements of the species most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species by taking into account

population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list LCR steelhead and LCR chinook salmon for ESA protection and also considers new data available that are relevant to the determination.

The relevant biological requirements are those necessary for LCR steelhead, LCR chinook salmon, and CR chum salmon to survive and recover to naturally-reproducing population levels, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are habitat characteristics that function to support successful spawning, rearing and migration. These involve adequate fish passage, water quality, water quantity, substrate, shade and cover. Because the current status of the LCR steelhead, LCR chinook salmon, and CR chum salmon, based upon their risk of extinction, has not significantly improved since the species were listed, adverse impacts to these biological requirements have the potential to be significant.

2.1.4 Environmental Baseline

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The action area is defined as all areas (bankline, adjacent riparian zone, and aquatic area) to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. For this Opinion, the action area is within the Miller Creek watershed as described in section 1.2.

2.1.5 Analysis of Effects

2.1.5.1 Effects of Proposed Action

Creeks and rivers are dynamic systems that naturally alter their courses in response to many physical processes. Roadways and other structures constructed along waterways are subject to flooding and undercutting as a result of these natural changes in the stream course. Structural hardening of embankments is the traditional means of protecting these structures along waterways. The structural hardening also results in impacts to the waterway.

Fish habitats are enhanced by the diversity of habitats at the land-water interface and adjacent bank (USACE 1977). Streamside vegetation provides shade that reduces water temperature. Overhanging branches provide cover from predators. Insects and other invertebrates that fall from overhanging branches may be preyed upon by fish, or provide food sources for other prey organisms. Immersed vegetation, logs, and root wads provide points of attachment for aquatic prey organisms, shelter from swift currents during high flow events, retain bedload materials, and reduce flow velocity.

Sedimentation

Potential impacts to listed salmonids from the proposed action include both direct and indirect effects. Potential direct effects include mortality from exposure to suspended sediments (turbidity) and contaminants resulting for construction. Potential indirect effects include behavioral changes resulting from elevated turbidity level (Sigler *et al.* 1984, Berg and Northcote 1985, Whitman *et al.* 1982, Gregory 1988), during river bank habitat alterations.

Suspended sediment and turbidity influences on fish reported in the literature range from beneficial to detrimental. Elevated total suspended solids (TSS) conditions have been reported to enhance cover conditions, reduce piscivorus fish/bird predation rates, and improve survival. Elevated TSS conditions have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Birtwell *et al.* 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (McLeay *et al.* 1984, 1987, Sigler *et al.* 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987). In addition, a potentially positive reported effect is providing refuge and cover from predation (Gregory and Levings 1988).

Fish that remain in turbid, or elevated TSS, waters experience a reduction in predation from piscivorus fish and birds (Gregory and Levings 1998). In systems with intense predation pressure, this provides a beneficial trade off (*e.g.*, enhanced survival) to the cost of potential physical effects (*e.g.*, reduced growth). Turbidity levels of about 23 Nephalometric Turbidity Units (NTU) have been found to minimize bird and fish predation risks (Gregory 1993). Exposure duration is a critical determinant of the occurrence and importance of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonids have evolved in systems that

periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids may be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, research shows that chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Turbidity, at moderate levels, has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Newly emerged salmonid fry may be vulnerable to even moderate amounts of turbidity (Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985). Fine redeposited sediments also have the potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to reduce incubation success (Bell 1991) and cover for juvenile salmonids (Bjornn and Reiser 1991).

Excavation in the stream channel associated with the culvert removal and other in-water work in Miller Creek may elevate the risk for turbidity and sediment transport within the action area. Because the potential for turbidity should be localized and brief, the probability of direct mortality is negligible. In-water work timing during the preferred in-water work timing period of July 1 through October 31, work area isolation, and fish removal will be employed as necessary, depending on presence of fish and/or flowing water to minimize the risk from turbidity and sediment transport during in-water work activities.

Chemical Contamination

As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the back-hoes, excavators, and other equipment requires the use of fuel, lubricants, *etc.*, which, if spilled into the channel of a waterbody or into the adjacent riparian zone, can injure or kill aquatic organisms. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain poly-cyclic aromatic hydrocarbons (PAHs), which can be acutely toxic to salmonids at high levels of exposure and can also cause chronic lethal and acute and chronic sublethal effects to aquatic organisms (Neff 1985). Similarly, exposure to herbicides can have lethal and sublethal effects on salmonids, aquatic invertebrates, aquatic vegetation, and target and non-target riparian vegetation (Spence *et al.* 1996).

Excavation in the stream channel associated with the culvert work will elevate the risk for chemical contamination of the aquatic environment within the action area. Because the potential for chemical contamination should be localized and brief, the probability of direct mortality is negligible. In-water work timing during the preferred in-water work timing period of July 1 through October 31, work area isolation, and fish removal will be employed as necessary, depending on presence of fish and/or flowing water to minimize the risk from chemical contamination during in-water work activities. In addition, the contractor will be required to

develop, implement and monitor a site specific pollution control plan in an effort to further minimize risk to the aquatic environment.

Riparian Vegetation and Stream Temperature

Woody riparian vegetation provides large wood to the stream, which encourages the creation of rearing and spawning areas. Riparian vegetation also provides water quality functions (*e.g.* temperature control and nutrient transformation), bank stability, detritus (insect and leaf input, small wood for substrate for insects), microclimate formation, floodplain sediment retention and vegetative filtering, and recharge of the stream hyporheic zone. Although little riparian vegetation currently exists at the project site, the five riparian trees to be removed and the Highway 30 RCBC do partially shade Miller Creek. The potential exists for a slight, short-term increase in water temperature as a result of increased solar exposure. However the replanting of 15 riparian trees, the survival of some of the willow cuttings, and natural recruitment of substrate and riparian vegetation would increase the ability of the new riparian area to support natural stream processes, including processes essential to supporting salmon, resulting in long-term, beneficial effects.

Fish Rescue, Salvage and Relocation

As a result of the proposed action, culvert removal and retrofit activities at the Miller Creek culverts may require potential direct handling of listed salmonids during fish removal. Direct and delayed mortality of LCR steelhead, LCR chinook salmon, or CR chum salmon juvenile from capture and relocation stress could occur during fish salvage and removal.

Stream Hydraulics

The reconstruction of the Miller Creek channel will decrease hydraulic constriction, improve fish passage, and improve general ecological connectivity such as sediment transport along Miller Creek.

Fish Passage

Although downstream fish passage may be temporarily impaired by pumping Miller Creek water around the isolated work area during culvert removal and retrofit activities, the proposed action will result in improved year-round fish passage conditions for both adult and juvenile salmonids and native fishes, including LCR steelhead, LCR chinook salmon, and CR chum salmon within the action area. As a direct result, long-term, beneficial effects to fish passage are expected to persist along Miller Creek.

2.1.5.2 Interrelated Actions

Interrelated actions include effects from actions that are part of the larger action and that depend on the larger action for justification. Many overhead and underground utilities run adjacent to Highway 30 and the frontage road and may need to be temporarily or permanently moved to facilitate the proposed action. The potential for movement of these various utilities will require ground disturbance. However, these potential adverse effects are not different or beyond the scope of those analyzed in section 2.1.5.1.

2.1.5.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the federal action subject to consultation". Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities, are being (or have been) reviewed through separate section 7 consultation processes. Therefore, these
action are not considered cumulative to the proposed action.

NOAA Fisheries is not aware of any specific future non-Federal activities within the action area that would cause greater impacts to listed species than presently occurs. NOAA Fisheries assumes that future private and state actions will continue at similar intensities as in recent years.

2.1.6 Conclusion

NOAA Fisheries has determined that, based on the available information, the proposed action is not likely to jeopardize the continued existence of LCR steelhead, LCR chinook salmon, or CR chum salmon. NOAA Fisheries used the best available scientific and commercial data to analyze the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NOAA Fisheries applied its evaluation methodology to the proposed action and found that it could cause slight, short-term degradation of anadromous salmonid habitat due to increases in sedimentation, turbidity, and temperature. Furthermore, NOAA Fisheries expects that construction-related effects and work isolation activities could alter normal feeding and sheltering behavior of juvenile LCR steelhead, LCR chinook salmon, or CR chum salmon, should any be present in the action area during the proposed action. NOAA Fisheries expects some direct or delayed mortality of juvenile LCR steelhead, LCR chinook salmon, or CR chum salmon as a result of fish rescue, salvage and relocation activities should any be present in the action area during the proposed action. NOAA Fisheries expects beneficial water quality and hydrologic effects from the Miller Creek culvert removal and riparian vegetation plantings. NOAA Fisheries expects long-term, beneficial effects of improved fish passage and hydraulic conditions as a result the Miller Creek culvert removal and retrofit activities.

NOAA Fisheries' conclusions are based on the following considerations: (1) Most of the proposed work will occur outside of the flowing waters of the Miller Creek (*i.e.*, in the dry); (2) in-water work will occur during the ODFW preferred in-water work period of July 1 through October 31, which NOAA Fisheries expects to minimize the likelihood of LCR steelhead, LCR chinook salmon, and CR chum salmon presence in the action area due to low flow conditions; (3) any increases in sedimentation and turbidity in the project reach of Miller Creek will be short-term and minor in scale, and would not change or worsen existing conditions for stream substrate in the action area; (4) long-term, beneficial effects will result from the proposed removal of the Miller Creek Highway 30 culvert and the retrofit of the railroad and frontage road culverts; and (5) the proposed action is not likely to impair properly functioning habitat,

appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to long-term survival and recovery at the population ESU scale.

2.1.7 Reintiation of Consultation

This concludes formal consultation on the Miller Creek Culvert Removal Project. As provided in 50 CFR 402.16, reintiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of authorized incidental take is exceeded, any operations causing such take must cease pending reintiation of consultation.

2.2 Incidental Take Statement

Section 9 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. "Harass" is defined as actions that create the likelihood of injuring listed species to by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. "Incidental take" is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of listed species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.2.1 Amount or Extent of the Take

NOAA Fisheries anticipates that the actions covered by this Opinion are reasonably certain to result in incidental take of LCR steelhead, LCR chinook salmon, and CR chum salmon because of increased sediment levels, chemical contamination, temperature increases during in-water work. Handling of juvenile steelhead, chinook salmon, or chum salmon during the work isolation process may result in incidental take of individuals if adequate water quantity and

quality allows juvenile salmonids to be present during the construction period. Based on estimates provided in the BA, NOAA Fisheries anticipates handling of up to 30 individuals, of which, up to four juvenile steelhead, chinook salmon, or chum salmon may be killed as a result of the fish rescue, salvage and relocation activities covered by this Opinion. The remaining incidental take resulting from harm are largely unquantifiable and NOAA Fisheries does not expect them to be measurable in the long term. The extent of authorized take is limited to LCR steelhead, LCR chinook salmon, or CR chum salmon in Miller Creek within the action area as specified in section 1.2 of this Opinion.

2.2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The FHWA has the continuing duty to regulate the activities covered in this incidental take statement. If the FHWA fails to require the contractor to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(a)(2) may lapse.

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize take of the above species. The FHWA shall:

1. Minimize the likelihood of incidental take from culvert removal or streambank alteration actions by directing the contractor to use an approach that maximizes ecological functions.

2. Minimize the likelihood of incidental take from activities involving culvert removal and retrofit, temporary access roads, use of heavy equipment, earthwork, site restoration, or that may otherwise involve in-water work or affect fish passage by directing the contractor to avoid or minimize disturbance to riparian and aquatic systems.

3. Minimize the likelihood of incidental take from in-water work activities by ensuring that the in-water work activities (culvert removal and retrofit) are isolated from flowing water.

4. Complete a comprehensive monitoring and reporting program to ensure implementation of these conservation measures are effective in minimizing the likelihood of take from permitted activities.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, FHWA must comply with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity.

1. To implement reasonable and prudent measure #1 (culvert removal or streambank alteration actions), the FHWA shall ensure that:

    a. The use of rock and riprap is avoided or minimized.
        i. Rock will be individually placed in a way that produces an irregularly contoured face to provide velocity disruption.
        ii. No end dumping will be allowed.
    b. Any instream large wood or riparian vegetation that is moved or altered during construction will stay on site or be replaced with a functional equivalent.
    c. Where feasible, the bankline will be revegetated using natural vegetation.

2. To implement reasonable and prudent measure #2 (culvert removal and retrofit, temporary access roads, use of heavy equipment, earthwork, site restoration), the FHWA shall ensure that:

    a. Project design. Alteration or disturbance of the stream banks and existing riparian vegetation will be minimized.
    b. In-water work. All work within the active channel will be completed within the in-water work period of July 1 - October 31. Extensions of the in-water work period must be concurred with, in writing, by NOAA Fisheries.
    c. Pollution and erosion control plan. A pollution and erosion control plan (PECP) will be developed for the project to prevent point-source pollution related to construction operations. The PECP will contain the pertinent elements listed below and meet requirements of all applicable laws and regulations:
        i. Measures will be taken to prevent erosion and sedimentation associated with access roads, construction sites, equipment and material storage sites, fueling operations and staging areas.
        ii. A description of the hazardous products or materials that will be used, including inventory, storage, handling, and monitoring.
        iii. A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on site, proposed methods for disposal of spilled materials, and employee training for spill containment.
        iv. Measures will be taken to prevent construction debris from falling into any aquatic habitat. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.
    d. Pre-construction activities. Prior to significant alteration of the action area, the following actions will be accomplished:
        i. Boundaries of the clearing limits associated with site access and construction are flagged to prevent ground disturbance of critical riparian

vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. A supply of erosion control materials (*e.g.*, silt fence and straw bales) is on hand to respond to sediment emergencies. Sterile straw or hay bales will be used when available to prevent introduction of weeds.

iii. All temporary erosion controls (*e.g.*, straw bales, silt fences) are in place and appropriately installed downslope of project activities within the riparian area. Effective erosion control measures will be in place at all times during the contract, and will remain and be maintained until such time that permanent erosion control measures are effective.

e. Earthwork. Earthwork, including drilling, blasting, excavation, dredging, filling and compacting, is completed in the following manner:

i. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained from outside of the riparian area or as otherwise approved by NOAA Fisheries.

ii. Material removed during excavation will only be placed in locations where it cannot enter streams or other waterbodies.

iii. All exposed or disturbed areas will be stabilized to prevent erosion.

(1) Areas of bare soil within 150 feet of waterways, wetlands or other sensitive areas will be stabilized by native seeding,[2] mulching, and placement of erosion control blankets and mats, if applicable, quickly as reasonable after exposure, but within seven days of exposure.

(2) All other areas will be stabilized as quickly as reasonable, but within 14 days of exposure.

(3) Seeding outside of the growing season will not be considered adequate for permanent stabilization.

f. Heavy Equipment. Heavy equipment use will be fueled, maintained and stored as follows:

i. Vehicle staging, maintenance, refueling, and fuel storage areas will be a minimum of 150 feet horizontal distance from any stream, except those vehicles and stationary equipment described in section 1.2.1 of this Opinion that require refueling within 150 horizontal feet of Miller Creek.

ii. All vehicles operated within 150 feet of any stream or waterbody will be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected will be repaired before the vehicle resumes operation.

iii. When not in use, vehicles will be stored in the vehicle staging area, except those vehicles described in section 1.2.1 of this Opinion that require storage within 150 horizontal feet of Miller Creek..

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[2] By Executive Order 13112 (February 3, 1999), Federal agencies are not authorized to permit, fund or carry out actions that are likely to cause, or promote, the introduction or spread of invasive species. Therefore, only native vegetation that is indigenous to the project vicinity, or the region of the state where the project is located, shall be used.

g. Site restoration. Site restoration and cleanup, including protection of bare earth by seeding, planting, mulching and fertilizing, will be done in the following manner:

i. Disturbed areas will be planted with native vegetation specific to the project vicinity or the region of the state where the project is located, and will comprise a diverse assemblage of woody and herbaceous species.

ii. No herbicide application will occur as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.

iii. No surface application of fertilizer will be used within 50 feet of any stream channel as part of this permitted action.

iv. Plantings will achieve an 80% survival or 80% cover success after five years. For the purposes of this Opinion, planting success criteria will be evaluated for all tubeling/seedling plantings and those willow cutting which survive one year after construction.

(1) If success standard has not been achieved after five years, the applicant will submit an alternative plan to NOAA Fisheries. The alternative plan will address temporal loss of function.

(2) Plant establishment monitoring will continue and monitoring reports will be submitted to NOAA Fisheries on an annual basis until site restoration success has been achieved.

3. To implement reasonable and prudent measure #3 (in-water work area activities), the FHWA shall ensure that the in-water work activities (culvert removal and retrofit) are isolated from flowing water.

a. If the fish salvaging aspect of this project requires the use of seine equipment to capture fish, it must be accomplished as follows:

i. Before and intermittently during pumping, attempts will be made to seine and release fish from the work isolation area as is prudent to minimize risk of injury.

ii. Seining will be conducted by, or under the supervision of a fishery biologist experienced in such efforts. Staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.

iii. ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during seining and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever appropriate, to prevent the added stress of an out-of-water transfer.

iv. Seined fish must be released as near as possible to capture sites.

v. The FHWA shall ensure that the transfer of any ESA-listed fish to third parties other than NOAA Fisheries personnel receives prior approval from NOAA Fisheries.

vi. The FHWA shall ensure that any other Federal, state, and local permits and authorizations necessary for the conduct of the seining activities will be obtained prior to project seining activity.

vii. The FHWA must allow NOAA Fisheries or its designated representative to accompany field personnel during the seining activity, and allow such representative to inspect the seining records and facilities.

viii. A description of any seine and release effort will be included in a post-project report, including the name and address of the supervisory fishery biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions before and following placement and removal of barriers, the means of fish removal, the number of fish removed by species, the condition of all fish released, and any incidence of observed injury or mortality.

b. If the fish salvaging aspect of this project requires the use of electrofishing equipment to capture fish, it must be accomplished as described in NOAA Fisheries' electrofishing guidelines[3].

4. To implement reasonable and prudent measure #4 (monitoring and reporting), the FHWA shall ensure that:

a. Within 120 days of completing the project, the FHWA shall ensure submittal of a monitoring report to NOAA Fisheries describing the FHWA's success meeting their permit conditions. This report will consist of the following information:

i. Project identification.

(1) Project name,

(2) starting and ending dates of work completed for this project, and

(3) the FHWA contact person.

ii. Isolation of in-water work area. All projects involving isolation of in-water work areas must include a report of any seine and release or other fish rescue and salvage activity including:

(1) The name and address of the supervisory fish biologist,

(2) methods used to isolate the work area and minimize disturbances to fish species,

(3) stream conditions prior to and following placement and removal of barriers,

(4) the means of fish removal,

(5) the number of fish removed by species,

(6) the location and condition of all fish released, and

(7) any incidence of observed injury or mortality.

[3] NMFS (National Marine Fisheries Service), *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

iii. Pollution and erosion control. A summary of all pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

iv. Site restoration. Documentation of the following conditions:
   (1) Finished grade slopes and elevations,
   (2) log and rock structure elevations, orientation, and anchoring, if any,
   (3) planting composition and density, and
   (4) a plan to inspect and, if necessary, replace failed plantings and structures for a period of five years, including the compensatory mitigation site.

v. A narrative assessment of the effects of the project and compensatory mitigation on natural stream function.

vi. Photographic documentation of environmental conditions at the project site before, during and after project completion.
   (1) Photographs will include general project location views and close-ups showing details of the project area and project, including pre- and post-construction.
   (2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.
   (3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

b. On an annual basis, for five years after completing the project, the FHWA shall ensure submittal of a monitoring report to NOAA Fisheries describing the FHWA's success in meeting their fish passage and site restoration goals. This report will consist of the following information:

i. Project identification.
   (1) Project name,
   (2) starting and ending dates of work completed for this project, and
   (3) the FHWA contact person.

ii. Site restoration. Documentation of the following conditions:
   (1) Any changes in log and rock structure elevations, orientation, and anchoring.
   (2) Any changes in planting composition and density.
   (3) A plan to inspect and, if necessary, replace failed plantings and structures, including the compensatory mitigation site.

iii. A narrative assessment of the effects of the project and compensatory mitigation on natural stream function.

iv. Photographic documentation of environmental conditions at the project site after project completion as they relate to fish passage and site restorations goals as described above.

(1) Photographs will include general project location views and close-ups showing details of the project area and habitat features of the channel relocated reaches.

(2) Each photograph will be labeled with the date, time, photo point, project name, the name of the photographer, and a comment describing the photograph's subject.

(3) Relevant habitat conditions include characteristics of channels, streambanks, riparian vegetation, flows, water quality, and other visually discernable environmental conditions at the project area, as they relate fish passage and site restorations goals.

c. Submit monitoring reports to:

NOAA Fisheries
Oregon Habitat Branch, Habitat Conservation Division
Attn: 2003/00067
525 NE Oregon Street, Suite 500
Portland, O R 97232-2778

d. If a dead, injured, or sick endangered or threatened species specimen is located, initial notification must be made to NOAA Fisheries' Law Enforcement Office, located at Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; phone: 360.418.4246. Care will be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

3. MAGNUSON-STEVENS ACT

3.1 Magnuson-Stevens Fishery Conservation and Management Act

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish

habitat: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem, and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.

- NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH.

- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activity that may adversely affect EFH, regardless of its location.

3.2 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

3.3 Proposed Action

The proposed action is detailed above in section 1.2 of this document. For the purposes of this consultation, the action area is defined as the streambed and streambank of Miller Creek, extending upstream to the project disturbance limits, and downstream approximately 100 meters (m) below the project disturbance limits to its confluence with the Multnomah Channel. This area has been designated as EFH for various life stages of chinook salmon and coho salmon.

3.4 Effects of Proposed Action

As described in detail in section 2.1.5.1 of this document, the proposed activities may result in short-term, adverse effects to water quality (sediment, chemical contamination, temperature). NOAA Fisheries expects short term adverse effects from increases in turbidity, chemical contamination and temperature within the action area. NOAA Fisheries expects beneficial hydrologic effects from decreased peak flows and no loss of potential infiltration and base flow contribution as a result of the proposed stormwater treatment system. NOAA Fisheries expects beneficial effects from improved fish passage and hydraulic conditions along Miller Creek as a result of the proposed culvert replacement.

3.5 Conclusion

The proposed action will adversely affect the EFH for chinook and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the FHWA, all of the reasonable and prudent measures and the terms and conditions contained in sections 2.2.2 and 2.2.3 are applicable to salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH recommendations.

3.7 Statutory Response Requirement

Please note that the MSA (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.8 Supplemental Consultation

The FHWA must reinitiate EFH consultation with NOAA Fisheries if either action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

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